

1. Project Design

Overall Goal. Many of the professional development programs available to preK-8 teachers suffer from a common malady, described by one teacher as “lots of great ideas, but no time to try them out and no plan for how to clearly implement them” (Farmer, 2001). In addition, many programs are short-term efforts—a brief workshop with little or no follow-up and no opportunity for ongoing education and training. The GREEN (GRowing Environmental Education Now) Teachers Institute is very different because it has evolved with significant input from its target audience: practicing preK-8 educators, whose curricula directly impact today’s students and tomorrow’s environmental decision-makers. The GREEN Teachers Institute (GTI) is the educational programming arm of the Hefner Zoology Museum (HZM), located at Miami University (Oxford, Ohio). The GTI consists of a series of yearlong courses at the introductory, advanced, and master levels. Each course includes an immersive one- or two-week summer workshop and two follow-up sessions during the academic year. All courses share one overall goal: to provide participants with the knowledge, skills, and confidence needed to teach an engaging science curriculum using hands-on and inquiry-based methods.

Project Background. One of the museum’s most popular offerings is *Museum Resources for Teachers*. We first offered the course in 2003 to elementary teachers only, with funding from the Greater Cincinnati Foundation. In that first year, participants rated *Museum Resources for Teachers* a 4.95 on a 5.0 scale. With these positive results, we approached the Institute of Museum and Library Services (IMLS) for funding to extend *Museum Resources for Teachers* for another three years; we were awarded \$74,250 (\$24,750/year for three years: 2004, 2005, 2006). Largely due to “word of mouth” among participants, the workshop’s popularity continues to grow; indeed, we have had a waiting list for *Museum Resources for Teachers* every year since its inception. Therefore, we sought funding from the Ohio Environmental Education Fund (OEEF, a division of the Ohio Environmental Protection Agency) to offer the workshop to additional teachers in 2006 and 2007 and to expand its scope to include a distinct component for early childhood (preK-2) educators; we were awarded \$33,172 (\$16,586/year for two years). The introduction of this new component proved highly beneficial: a full 30% of participants in 2006 were preK-2 educators, and the workshop received an affirmative evaluation of 4.77 on a 5.00 scale. In short, *Museum Resources for Teachers* contributes to the HZM’s long-term capacity as a resource for lifelong learning. In four years, the program has established a notable record of success. It also continually evolves based on participant and evaluator feedback. Thus, we are seeking continuation funding from IMLS to offer the course in its enhanced form for three more years (2007, 2008, 2009).

Project Overview. *Museum Resources for Teachers* uses the HZM’s galleries, exhibits, and collections to help preK-8 educators develop the knowledge, skills, and confidence needed to teach basic biological, ecological, and environmental concepts using hands-on and inquiry-based methods. The course consists of a two-week summer workshop held at the HZM and a series of follow-up Saturday sessions held during the academic year. We will offer the workshop and follow-ups in 2007, 2008, and 2009. Each session will serve 40 teachers, for a total 120 over the three-year project. Teachers will receive 6 graduate credit hours for the yearlong program: 4 for the summer workshop and 2 for the follow-up sessions.

Through lectures and discussions during the two-week workshop, participants acquire the latest information on science concepts and environmental issues that relate directly to academic content standards. Using this information, they explore and analyze the HZM’s collections and exhibits to determine how these resources can be used for hands-on and inquiry-based learning. Participants then design a series of science and environmental education activities that use museum resources as the basis for student inquiries, test these activities through peer teaching, and discuss other ways to integrate non-classroom settings into their curricula. (It is important to note that although the workshop uses the HZM’s resources, the concepts, activities, and teaching methods learned can be applied to resources in other museums and non-classroom settings.) In a one-day field experience, teachers travel to several nearby rock outcroppings to explore the geology and fossils of the area first-hand, thereby gaining further exposure to learning environments outside of the formal classroom. We chose to highlight local geology because Southwest Ohio is noted for its Ordovician fossils and because the museum maintains an extensive fossil collection, which is available for use in student activities. For indoor work, participants divide into small groups according to grade level taught (preK-2, 3-5, 6-8). Each small group is led by a master teacher; master teachers are chosen from participants in past workshops who demonstrate

excellence in their own classrooms. Small groups are highly effective because they allow teachers to instruct other educators at their own grade levels and enable participants to interact with, and learn from, their peers.

During the academic year, teachers take their students to the HZM or other non-formal setting to conduct their activities. In the first Saturday follow-up session, participants discuss students' reactions and make revisions. In addition, we travel to a local wetland, where we again model hands-on and inquiry-based learning in the outdoors. In the second follow-up, we take participants to a large regional museum (such as the Indianapolis Children's Museum) to further assess and analyze non-classroom teaching resources. At the end of the program, participants' activities are published on our website (www.EnvironmentalEducationOhio.org). We also plan to assemble these activities into a *Teacher's Resource Guide for Non-Classroom Settings*.

The proposed project builds upon the success of our initial efforts that were funded by the Greater Cincinnati Foundation and IMLS; however, it differs from those efforts in a significant way. Beginning with *Museum Resources for Teachers* 2006, we are emphasizing *early childhood education*. We specifically recruit preK-2 educators, an underserved audience, and immerse them in hands-on and inquiry-based teaching for young children. Master teachers with expertise in early childhood education focus on environmental concepts that are appropriate for young children, such as animal interactions and habitats. In addition, to develop activities for their students, preK educators use the Imaginarium, a newly opened gallery at the HZM designed to spark the imagination and wonder of very young learners (ages 3-8). Exhibits include interactive dioramas of seven habitats, a six-foot model of a rotting log, and a life-size (eight feet high) prairie soil profile.

Project Objectives. *Museum Resources for Teachers* seeks to provide preK-8 teachers with a comprehensive program of science and environmental education that emphasizes the use of non-classroom settings. To meet this goal, we have established three objectives:

- Objective 1: Provide 120 preK-8 teachers with the knowledge, skills, and confidence needed to lead students in hands-on and inquiry-based activities in non-classroom settings.
- Objective 2: Provide participants with substantial follow-up throughout the academic year in order to reinforce concept knowledge and sound teaching methods.
- Objective 3: Disseminate results via electronic and print media and personal presentations.

Project Activities.

- **Select Participants** Participants will be chosen based on supervisor nominations and written applications. Criteria include participants' desire to increase their knowledge of science and environmental content, implement hands-on and inquiry-based methods, and incorporate non-classroom settings in their curricula.
- **Develop Curriculum, Syllabus, and Schedule** For the summer workshop and Saturday follow-up sessions, we will design program content so that it allows each participant to investigate science and environmental concepts relevant to his/her individual classroom curriculum.
- **Order Books and Supplies** Books, journal notebooks, and other relevant supplies will be provided to each participant. Participants will keep these materials for use with their students.
- **Conduct Summer Workshop (4 graduate credit hours)** Participants will meet from 9:00 a.m. to 3:30 p.m. each day at the HZM to develop their activities and participate in a one-day field experience.
- **Conduct Saturday Follow-Up Sessions (2 graduate credit hours)** Participants will be required to attend two Saturday sessions, from 9:00 a.m. to 3:30 p.m., during the academic year following the workshop.
- **Evaluate Project** We will conduct formative and summative evaluations of the workshop (in the summer) and of the overall project (after the follow-up sessions). For long-term assessment, we will hire a curriculum/evaluation consultant to review the workshop content and evaluation data.
- **Disseminate Program Results** Following course completion, we will publish participants' activities online and in hard copy. We also will ask participants to present their experience to their peers at in-services and professional meetings. Further, we will present the project to administrators and others who may wish to replicate the effort in their own districts.

Project Management. *Museum Resources for Teachers* will be directed by Dr. Donald Kaufman (Professor Emeritus, Zoology; Director, HZM) and Lisa Rosenberger Streit (Environmental Education Specialist, HZM), both of Miami University. Together, Kaufman and Streit will oversee recruitment and planning activities (select participants; develop curriculum, syllabus, and schedule; order books and supplies). Kaufman also will oversee instruction during the workshop and follow-up sessions, providing guidance to master teachers and participants. Likewise, Streit will oversee the day-to-day operation of the workshop and follow-up sessions. Four master teachers, two of whom are early childhood education specialists, will lead participants in activities and discussions and provide one-to-one feedback. Further, an online specialist will ensure that teachers' activities are posted to the website efficiently and accurately. Finally, a curriculum/evaluation consultant will provide invaluable suggestions for how to continuously improve the program. Please see the section entitled "Project Resources: Personnel" for further information about the professionals filling these positions.

Partners. Since its inaugural offering in 2003, *Museum Resources for Teachers* increasingly has drawn participants from a wider arc of counties—several of which are located in underserved urban or rural areas. In 2006, we served primarily seven Southwest Ohio counties: Butler, Brown, Clermont, Clinton, Hamilton, Preble, and Warren. Still other participants hailed from counties farther afield, including Darke and Franklin. This point is especially relevant in a discussion about partnerships because each participant must be recommended by his/her supervisor, principal, or superintendent. We view that recommendation as a confirmation of our joint investment in the individual educator. Formally, we have core collaborations with Mason City Schools (Mason, Ohio), Talawanda City Schools (Oxford, Ohio), and Hamilton City Schools (Hamilton, Ohio). These districts have endorsed the GTI at school board and community meetings. District administrators disseminate recruiting materials each year throughout their schools, and many provide in-kind contributions for various GTI workshops. (For example, another GTI course, *Picture-Perfect Science*, was offered at an elementary school in Mason in 2006; Mason City Schools allowed us to use that building free of charge for two weeks.) Please see Attachment 1, "Letters of Collaboration," for specific information about district partnerships.

Process for Adjustment. We are fortunate to have developed an effective process for adjustment during our previous IMLS-funded project. The cornerstone of this process entails observing participants and seeking their feedback. We have inserted ample independent work time into the syllabus so that teachers can develop their original activities in the museum environment and build their own professional networks with other educators. During that time, project personnel (directors and master teachers) watch and listen, noting how participants approach their work, what they emphasize in their lessons, and how they interact with one another. We also ask participants to complete written evaluations of the program at three points: mid-workshop, end of workshop, and end of follow-up sessions. Using this information, we adjust the course as needed. Some adjustments are small, such as omitting the modeling of a lesson on dichotomous keys to allow for more independent work time. Others are more substantial. For example, we originally did not plan to include a wetland excursion during the first follow-up session. However, participants responded so strongly to the fossil-finding experience during the workshop that we inquired about their interest in another field excursion and revised the program accordingly.

Evaluation. To ensure that the summer workshop, Saturday follow-up sessions, and resulting materials meet the project's objectives (detailed above), we will use various means of evaluation. To measure and evaluate the effectiveness of Objective 1, we will use pretests and posttests that address participants' confidence in (1) guiding students in hands-on and inquiry-based learning and (2) incorporating non-classroom settings in their curricula. Two open-ended evaluations will be used to measure participants' understanding of the project's science and environmental content (Objectives 1 and 2). In addition, at the end of the second follow-up session, participants will complete a survey developed to record and evaluate their analyses of exhibits, programs, and other museum resources (Objectives 1 and 2). Objective 3 will be measured by the presentations given by participants and personnel at local, regional, or national meetings. Additionally, as discussed below in "Project Resources: Personnel," we will employ a curriculum/evaluation consultant to measure long-term success by analyzing the workshop curriculum and participant feedback in light of the academic content standards.

2. Grant Program Goals

Aligning with the IMLS focus on lifelong learning, *Museum Resources for Teachers* uses the HZM's galleries, exhibits, and collections to enhance science and environmental education for multiple audiences. *Participants* take the workshop and subsequent follow-ups to gain the knowledge, skills, and confidence needed to teach hands-on and inquiry-based science in non-formal settings and the classroom. *Students* are led in investigations of the natural world by teachers who are confident in their knowledge and abilities. With a repertoire of standards-related activities for non-classroom settings, participants are able to provide students with an accurate and unbiased understanding of the environment and environmental issues. *Other educators* benefit from the project as well, since participants are encouraged to provide mentorship and in-service support to their peers. *The community at large* reaps benefits as teachers and students throughout Southwest Ohio become more environmentally literate citizens. Thus, *Museum Resources for Teachers* has a far reach, promoting not only the HZM mission and strategic plan (please see directly below) but also the IMLS call that museums take the lead in developing a "Nation of Learners."

3. How the Project Fits into Strategic Plan and Mission

The proposed project advances the HZM's mission of promoting an understanding of, and appreciation for, the importance of animal biodiversity, conservation, and ecology by making these topics accessible and intriguing to preK-8 educators, who then apply what they have learned to their interactions with other identified audiences, including preK-8 students and the community at large. A course that promotes both meaningful interaction with museum resources and the use of hands-on and inquiry-based instruction in non-formal settings, *Museum Resources for Teachers* also is grounded in key components of our strategic plan.

The success of the first four years of *Museum Resources for Teachers* has expanded the ways in which the HZM shares its collections, content, and knowledge with its audiences. For example, many past participants return to the HZM year after year, thereby continually exposing large groups of new students to our resources and materials. Likewise, participants have played a key role in designing the HZM "discovery trunks"—self-contained hands-on science units that can be carried into any learning environment. These trunks, including the Fossils Trunk, Skulls Trunk and Dichotomous Keys Trunk, enjoy brisk use; on average, two trunks per month are borrowed by regional preK-8 teachers for use with their students. Were we unable to secure funding for additional years of *Museum Resources for Teachers*, its impact still would resonate throughout the HZM and surrounding communities because we would maintain the museum-educator network established during the course and continue to disseminate the materials (hands-on and inquiry-based activities and discovery trunks) developed during the workshops. However, because the course continues to be a viable resource for preK-8 educators and is able to evolve to fit their needs, we believe it a worthwhile effort to seek continuation funding.

4. Strategic Plan: Process and Financial Resources

The HZM's current strategic plan dates to January 2001, when we began gathering information from four main sources: analysis of museum archives, discussions with past GTI participants, self-study results of staff expertise/experience, and consultation with the Hefner Museum Committee (comprised of faculty members from the Department of Zoology). We synthesized this information with the HZM's physical and virtual resources at that time to determine what we had to offer, how we wanted to grow, and how to prioritize our goals. Since 2001, we have developed methods to gather input from additional sources, including local and regional community members. We use our sources' collective feedback to routinely refine the strategic plan across the long term. (Please see the attached "Strategic Plan Summary" for further details.)

A robust funding base helps to ensure the HZM's long-term stability. The museum's daily operations are funded by a small endowment. Our programming efforts are funded by Miami University (cost share and in-kind donations) and a complement of external agencies. Our grant program is ongoing and extensive. We seek funding from regional, state and national organizations, as well as individuals. Since 1997, we have garnered approximately \$750,000 from diverse external sources, including IMLS, US Environmental Protection Agency, Procter & Gamble, Cinergy/Duke Energy, and the Martha Holden Jennings Foundation. Currently, our funding

plan has two foci: procure endowment funds from a private or public donor and secure multiple-year project grants. These foci would enable us to most efficiently enact all components of our strategic plan.

5. Appropriateness of Project for Institution, Audience

Audiences. The primary audience for *Museum Resources for Teachers* is preK-8 teachers in Southwest Ohio. The secondary audiences are preK-8 students, other educators, and the community at large. (Please see "Grant Program Goals" above.) We have identified need through literature review, audience input, and outcomes from previous offerings of *Museum Resources for Teachers*.

Literature Review. Many preK-8 teachers have had difficulties implementing the National Science Education Standards, citing inadequate planning time and a lack of science resources, such as in-service professional development (NSTA, 1999). Additionally, many teachers do not receive adequate pre-service science training (Eason, 2003; Koswatta, 2001). According to a survey conducted by the North American Association for Environmental Education, less than 40 percent of the 1,505 teachers surveyed had received any training, pre- or in-service, in environmental teaching methods (NAAEE, 2000). Of these teachers, less than 50 percent received any training during their pre-service education, leaving over half of the teachers to seek in-service programs such as the GTI. Indeed, this lack of training leaves teachers feeling that they need more interaction with the science fields: A survey conducted by the Bayer Corporation found that only 6 in 10 teachers felt that they were qualified to teach science; similarly, the National Science Teachers Association reported that only 1 in 4 elementary teachers felt very well qualified (Feller, 2004; NSTA, 2002). This low level of confidence is creating problems in our schools. On the 2000 federal science tests, less than one-third of eighth-grade students obtained a score of proficient, and scores for the other two grades, fourth and twelfth, were even lower (Feller, 2004). Compounding this troubling trend is the increasing lack of nature-based learning experiences for very young children. In his book *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, Richard Louv links young children's alienation from nature to problems such as attention-deficit hyperactivity disorder (ADHD), chronic stress, depression, and obesity (2005). To forestall these and other problems, including low academic achievement later in life, Louv argues for immersing very young children in hands-on, nature-based exploration, which captures the imagination and stimulates creativity.

Teaching science with hands-on and inquiry-based methods benefits students in many ways: Students are better able to make educated decisions about the environment, and when teachers use methods that incorporate local areas (such as streams and fields), science becomes relevant and exciting. In its September 2000 report *Environment-Based Education: Creating High Performance Schools and Students*, the National Environmental Education and Training Foundation encouraged the use of local environments such as parks and schoolyards as learning areas in order to create interest among students (NEETF, 2000). Similarly, in *Best Practices for Environmental Education: Guidelines for Success*, the Environmental Education Council of Ohio echoed the call for using non-classroom settings, specifically with young learners; the report noted that early childhood education flourishes when learning occurs in environments such as museums and zoos (Meredith et al., 2000). Also, as schools implement more environmentally based education, they see an increase in test scores in science, math, reading and social studies, as well as a decrease in discipline problems (NEETF, 2000; NAAEE, 2001; Archie, 2001). This increase in performance across the board is due, in part, to the multidisciplinary nature of environmental science, which can capture and maintain students' interests in other fields.

Audience Input. The GTI has a long history of success, which largely has been shaped by the teachers and administrators that it serves. Indeed, throughout our 20-year history, we have been guided by a singular constant: We design new offerings in response to participants' feedback and at their request. We began working with elementary teachers in 1986, when we helped to conduct a course emphasizing hands-on science. Many of the teachers with whom we worked expressed a desire to learn more about life sciences and environmental studies. In response, we developed *Leadership in Environmental Education*, an introductory program for K-8 teachers that focused on ecology. We offered this program from 1992-98 at various sites in Southwest Ohio.

Enthused by their newly acquired knowledge and excited about science, many of the participating teachers told us that they wanted to learn more about ecology, natural history, and environmental studies. Consequently, in 1996, at the urging of teachers and with their input, we designed an inquiry-based and field-oriented

advanced program entitled *Advanced Environmental Education through Inquiry*. That pilot program marked the official genesis of the GTI and has been requested by teachers every year since its inception.

Likewise, in 2003, we introduced two new GTI efforts: *Science for Ohio* and *Museum Resources for Teachers*. In his work as a GTI master teacher, John Farmer (also a fifth-grade teacher in the Forest Hills School District) talked with other educators about how they use technology in their classrooms. The *Science for Ohio* website (found at www.EnvironmentalEducationOhio.org) is a direct result of these discussions, and participants in the related workshop implement the site's online science activities and explore ways to further integrate technology into their curricula. As with the advanced effort, participants consistently give *Science for Ohio* high marks, and at teachers' request, we offer the workshop at least once every summer.

Museum Resources for Teachers was developed much the same way. As we drafted the HZM's strategic plan, we talked with GTI participants and other interested parties about how we could best incorporate the museum's resources into effective, interesting science and environmental education programming. We examined this feedback, as well as a wealth of published research, and designed *Museum Resources for Teachers* as a professional development program that couples effective pedagogy with a novel learning environment. The program provides participants with opportunities to gain the knowledge, skills, and confidence needed not only to teach hands-on and inquiry-based science but also to teach it outside of their formal classrooms. This comprehensive treatment makes *Museum Resources for Teachers* a best solution.

Outcomes from Previous Offerings of *Museum Resources for Teachers*. November 2006 marks the end of three years of generous funding from IMLS for the first iteration of *Museum Resources for Teachers*. The positive outcomes from these offerings reinforce our conviction that the course is a best solution for its primary and secondary audiences, all of which are included as target populations in our statement of purpose. The course also aligns with the museum's particular focus on preK-8 educators. As our closing report will indicate, from 2003-06, we served 150 preK-8 teachers across seven counties in Southwest Ohio. Participants' evaluations of the course indicate that they have gained the knowledge, skills, and confidence needed to lead hands-on and inquiry-based learning. In 2004, participants rated their overall experience with the course as 4.83 on a 5.00 scale; in 2005, 4.89/5.00; and in 2006, 4.77/5.00. Please see Attachment 2, "Cumulative Evaluation," for a comprehensive look at participants' quantitative and qualitative ratings from 2003-06. For further evidence, please see Attachment 3, "Letters of Support," which includes a sample of participants' letters detailing their experiences with the course. Finally, Attachment 4 contains a syllabus, which demonstrates that the course activities and requirements promote participants' acquisition of concept knowledge and sound pedagogy. In addition, two points merit special attention: First, the introduction of the emphasis on early childhood education in the 2006 offering was extremely well received. One-third of participants from that year are preK-2 specialists, many of whom already have recommended the course to their colleagues. Second, these word-of-mouth recommendations are a key part of GTI publicity. We maintain a database of past participants, which we use to distribute mailings about courses. We call upon our contacts in partner districts to disseminate information in their schools. We also maintain applications online. While these methods are valuable, we have found our most efficient recruiting tool is past participants' discussions about the GTI with other educators.

6. Project Resources: Time and Budget

The GTI's long history and exemplary track record are perhaps the best evidence of its ability to provide quality professional development programs for preK-8 teachers. Further, in addition to receiving consistently high marks from participants, the GTI has been recognized at the state and national levels. In 1997, the Environmental Education Council of Ohio convened a panel to review OEEF project grants targeted for grades K-12. Of 46 projects, just 14 were evaluated as outstanding, one of which was *Advanced Environmental Education through Inquiry*. Likewise, in December 2004, when the OEEF again enlisted independent reviewers to assess its grant awards, two GTI projects (awarded in 1999 and 2002) were recognized as outstanding efforts. Likewise, the GTI received the 2002 National Arbor Day Foundation Education Award. Similarly, as our statement of purpose indicates, the HZM has provided resources, materials, and programs to its audiences for more than 45 years. Further, the GTI courses are a key component of our strategic plan; as such, we build the summer workshops and academic-year follow-ups directly into the HZM master schedule.

We have developed a detailed timeline for *Museum Resources for Teachers* 2007-10: Workshops will be offered in summer 2007, 2008 and 2009, all with follow-up sessions extending into the next academic year. The project start date (based on use of IMLS funds) is August 1, 2007; the project end date is July 31, 2010.

| Activity | Year 1 | Year 2 | Year 3 |
|---|---------------|---------------|---------------|
| Complete Program Planning | 01/07-08/07 | 01/08-08/08 | 01/09-08/09 |
| • <i>Select participants</i> | • 01/07-05/07 | • 01/08-05/08 | • 01/09-05/09 |
| • <i>Develop curriculum, syllabus, and schedule</i> | • 05/07-07/07 | • 05/08-07/08 | • 05/09-07/09 |
| • <i>Order books and supplies</i> | • 08/07 | • 08/08 | • 08/09 |
| Conduct Summer Workshop | 08/07 | 08/08 | 08/09 |
| Conduct Saturday Follow-Up Sessions | 09/07-05/08 | 09/08-05/09 | 09/09-05/10 |
| Evaluate Project | 08/07 & 05/08 | 08/08 & 05/09 | 08/09 & 05/10 |
| Disseminate Program Results | 07/08 | 07/09 | 07/10 |

The budget for *Museum Resources for Teachers* 2007-10 is \$708,646 (\$236,215/year). Of this amount, we are requesting \$74,250 (\$24,750/year) from IMLS. These monies will be used for participant stipends, books and supplies, and transportation to the museum for participants and their students during the academic year. These budget categories are similar to those for the first four years of *Museum Resources for Teachers*, which garnered support from the Greater Cincinnati Foundation, IMLS, and OEEF. In addition, Miami University will support all years of the project with cost-share and in-kind funds. However, *support from IMLS is essential because the University's contribution is contingent upon course enrollment, and we cannot offer the course in the absence of sufficient external funding.* IMLS support represents 10 percent of the total budget. The majority of the budget, 83 percent, will be covered by Miami University. The OEEF will contribute the remaining 7 percent in 2007. In 2008-09, this 7 percent will be covered by the HZM or another external funding agency.

7. Project Resources: Personnel

As described in the "Project Design: Project Management" section above, *Museum Resources for Teachers* is directed by **Dr. Donald Kaufman** and **Lisa Rosenberger Streit**, both of Miami University. With over three decades of experience in education and environmental science, Kaufman has taught elementary students, undergraduates, graduate students, and teachers. As Director of the HZM, he is responsible for the overall management of the facility and its programs. Streit earned a BA in English, a BS in Secondary Education, and a Master's degree in Technical and Scientific Communication with a concentration in environmental science. She has taught secondary students, undergraduates, teachers, and corporate professionals; she also has designed curricula for all of these levels. Her primary responsibility as Environmental Education Specialist is to develop the HZM's science and environmental education programs.

Participants in *Museum Resources for Teachers* also benefit from the knowledge and experience of four master teachers, two of whom are early childhood education specialists. **Adriane Carlson**: With dual Master's degrees in Botany and Life Sciences Education, Carlson currently teaches ninth-grade science at Talawanda High School (Talawanda School District). **Tad Liechty**: An early childhood educator for 21 years, Liechty teaches first grade at Harrison Elementary School (Southwest Local School District). She holds a Master's degree in Elementary Education and is a certified literacy coordinator. **Lisa Stiver**: An early childhood educator since 1985, Stiver teaches second grade at Shawnee Elementary (Lakota Local Schools). In addition to a Master's degree in Elementary Education, she holds an Ohio Provisional Certificate for education of handicapped (K-12). **Linda Sutphin**: With 30 years' experience in elementary education and Master's degree in Geology, Sutphin currently serves as a Science Curriculum Leader for Mason City Schools.

Rounding out the personnel for *Museum Resources for Teachers* are an online specialist and a curriculum/evaluation consultant. **John Farmer**: A fifth-grade teacher at Ayer Elementary (Forest Hills Schools) and co-creator of the *Science for Ohio* workshop, Farmer will publish participants' activities on our website. **Kathy Raftery**: An intermediate science teacher and former district-wide Science Coach for Cincinnati Public Schools, Raftery will analyze the existing course curriculum and evaluations and make suggestions for improvement based on participant feedback and the academic content standards.

Schedule of Completion

| Activity | Year 1 | Year 2 | Year 3 |
|--|---|---|---|
| <i>Complete Program Planning</i> <ul style="list-style-type: none"> • Select participants • Develop curriculum, syllabus, schedule • Order books and supplies | <i>01/07-08/07</i> <ul style="list-style-type: none"> • 01/07-05/07 • 05/07-07/07 • 08/07 | <i>01/08-08/08</i> <ul style="list-style-type: none"> • 01/08-05/08 • 05/08-07/08 • 08/08 | <i>01/09-08/09</i> <ul style="list-style-type: none"> • 01/09-05/09 • 05/09-07/09 • 08/09 |
| <i>Conduct Summer Workshop</i> | <i>08/07</i> | <i>08/08</i> | <i>08/09</i> |
| <i>Conduct Saturday Follow-Up Sessions</i> | <i>09/07-05/08</i> | <i>09/08-05/09</i> | <i>09/09-05/10</i> |
| <i>Evaluate Project</i> <ul style="list-style-type: none"> • Middle and end of workshop • End of follow-up sessions • Evaluation consultant | <i>08/07 & 05/08</i> <ul style="list-style-type: none"> • 08/07 • 05/08 • complete 05/08 | <i>08/08 & 05/09</i> <ul style="list-style-type: none"> • 08/08 • 05/09 • complete 05/09 | <i>08/09 & 05/10</i> <ul style="list-style-type: none"> • 08/09 • 05/10 • complete 05/10 |
| <i>Disseminate Program Results</i> <ul style="list-style-type: none"> • Online & hard copy • Presentations | <i>07/08</i> <ul style="list-style-type: none"> • 07/08 • throughout project | <i>07/09</i> <ul style="list-style-type: none"> • 07/09 • throughout project | <i>07/10</i> <ul style="list-style-type: none"> • 07/10 • throughout project |

BUDGET FORM - PAGE FOUR

Section B: Summary Budget

| | \$ IMLS | \$ Cost Share | \$ TOTAL COSTS |
|-----------------------------------|-----------|---------------|----------------|
| 1. Salaries and Wages | | 177,601.00 | 177,601.00 |
| 2. Fringe Benefits | | 48,682.00 | 48,682.00 |
| 3. Consultant Fees | | 51,882.00 | 51,882.00 |
| 4. Travel | 20,400.00 | 6,000.00 | 26,400.00 |
| 5. Supplies and Materials | 10,650.00 | 36,701.00 | 47,351.00 |
| 6. Services | | | 0.00 |
| 7. Student Support | | | 0.00 |
| 8. Other Costs | 43,200.00 | 313,530.00 | 356,730.00 |
| TOTAL DIRECT COSTS (1–8) | 74,250.00 | 634,396.00 | 708,646.00 |
| 9. Indirect Costs | | | 0.00 |
| TOTAL COSTS (Direct and Indirect) | 74,250.00 | 634,396.00 | 708,646.00 |

Project Funding for the Entire Grant Period

| | |
|--------------------------------------|------------|
| 1. Grant Funds Requested from IMLS | 74,250.00 |
| 2. Cost Sharing: | |
| a. Cash Contribution | 329,116.00 |
| b. In-Kind Contribution | 305,280.00 |
| c. Other Federal Agencies* | 0.00 |
| d. TOTAL COST SHARING | 634,396.00 |
| 3. TOTAL PROJECT FUNDING (1+2d) | 708,646.00 |
| % of Total Costs Requested from IMLS | 10.47% |

* If funding has been requested from another federal agency, indicate the agency's name: